



Placental cord insertion and the risk of twin-to-twin transfusion syndrome

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Objective

The purpose of the study is to examine the association between the site of placental cord insertion and the risk of twin-to-twin transfusion syndrome (TTTS).

Methods

This was a retrospective observational study of monochorionic diamniotic twin pregnancies followed from the first trimester between January 2002 and January 2016. We analyzed the association between placental cord insertion as registered on ultrasound before 18 weeks and the risk of developing TTTS. We divided the cohort into 3 groups based on the combination of cord insertion sites: concordant (eccentric-eccentric; marginal-marginal; velamentous-velamentous), intermediate (eccentric-marginal; marginal-velamentous) and discordant (eccentric-velamentous). In addition, we also compared cases of no velamentous insertion in any of the twins to cases of a velamentous insertion in at least one twin and in both twins.

Results

A total of 559 pregnancies were included in this study. Information on the cord insertion sites was available in 524 pregnancies (94%). The prevalence of concordant, intermediate and discordant umbilical cord insertions was 46.7% (n = 245), 38.2% (n = 200) and 15.1% (n = 79), respectively. Univariate analysis showed that a discordant umbilical cord insertion was associated with a higher risk of TTTS (OR 2.52, 95% CI 1.28-4.99). This association was not significant for the concordant and intermediate groups. The score test for trend of odds showed an increasing risk of TTTS with increasing discordance of cord insertion sites ($p < 0.05$). A velamentous cord insertion in at least one twin and in both twins was also associated with a higher risk of TTTS (OR 2.88, 95% CI 1.64-5.05 and OR 7.62, 95% CI 1.50-38.59, respectively). Step down logistic regression analysis showed a velamentous cord insertion in at least 1 twin to best predict TTTS (OR 3.59, 95% CI 1.39-9.31).

Conclusion

The more discordant the umbilical cords insert into the placenta, the higher the risk of TTTS. A velamentous cord in at least one twin is the best predictor of TTTS.